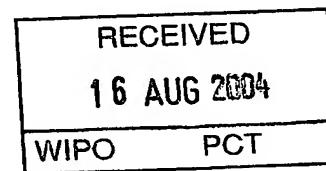




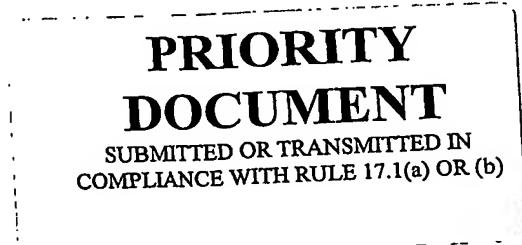
**Patent Office  
Canberra**

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003903968 for a patent by SOLAR SAILOR PTY LTD as filed on 31 July 2003.



WITNESS my hand this  
Eleventh day of August 2004

LEANNE MYNOTT  
MANAGER EXAMINATION SUPPORT  
AND SALES



Advanced Technology Watercraft

SOLAR SAILOR

## PROVISIONAL PATENT

for

### AQUATIC ANIMAL SHAPED UNMANNED DRONES.

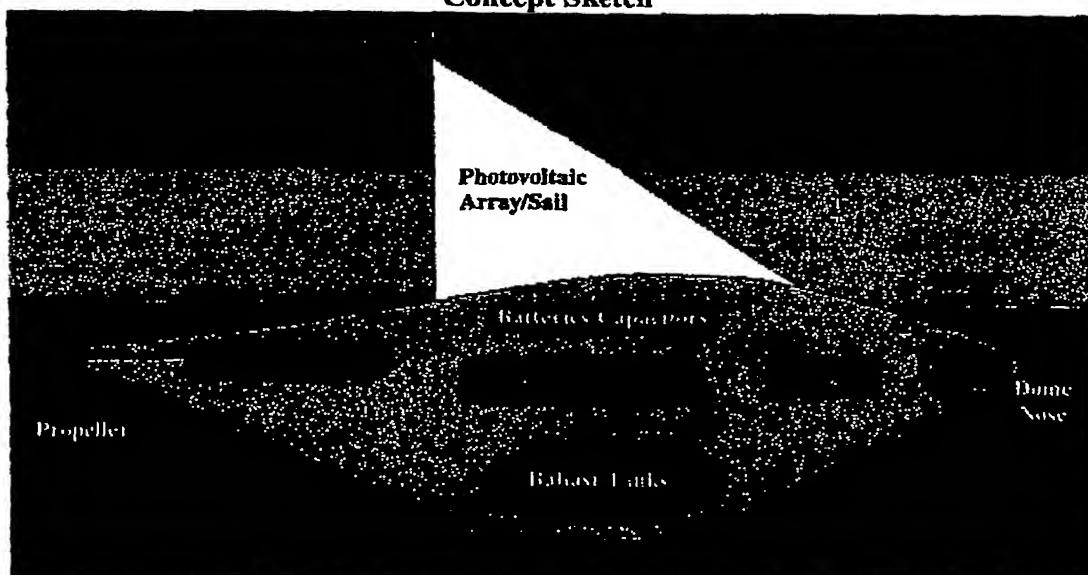
Invention is related to unmanned marine drones.

The design emulates aquatic animals such as a fish, dolphins, whales, tortoises, squid, octopi or any other aquatic animal.

They will be able to go to sea for years without refueling or maintenance, using renewable energy such as solar and wind.

They will utilize command and control relay centers, commanding individual drones or operating in groups of 1,000 or more unmanned drone vessels. They will be operate via remote control systems eg satellites or airborne intelligence systems eg planes or balloons or work via a communication system between individual drones with each acting as part of a group and relaying messages via a chain of command back to a ship or base.

Concept Sketch



### **Vessel concept:**

The fin/wing which is pivotally mounted to the drone (covered by "Pivotal Sailing Rig" Australian Patent NO. 717925) can sail, angle optimally to sun to collect solar energy or lie down along length of body of vessel.

Sensing is via antennae, the wing/fin/sensors itself, the drone itself or the "dome nose" of the vessel.

Propulsion is via electric motor driving a propeller, fin tail, jet or other means.

Energy is stored in a battery and/or capacitor and/or fuel cell.

Power is from solar and/or wind and/or wave.

Range is indefinite at loiter speeds.

Cruising speed is limited to renewable energy plus stored energy.

The drone will have a short sprint capability using capacitors or rapid energy discharge devices.

Life expectancy at sea - many years without return to land.

### **Functions:**

- Long term patrol
- Geo - stationary buoy function.
- Interception of targets.
- Clandestine/stealth operations,
- Intelligence gathering
- Sensing of water and air, for pollution, smugglers illegal operations.
- Interception of electromagnetic transmissions.
- Detection
- Surveillance
- Deployment in harbour from a ship to protect ship when docked from attack.
- Sea rescue and retrieval
- Underwater retrieval
- Underwater surveillance

### **Features**

- A self-powered payload bay to carry devices including sensors and weapons.
- Ability of wing/fin to sail and angle to the sun to collect solar power using patent
- Ability of wing/fin to lie down along body of drone to reduce windage but still collect solar energy.
- Ability to dive under the water for prolonged periods using stored energy to avoid ship, storms or for stealth operations.